

BENCHMARKS

VOLUME 4 NUMBER 5 NORTH TEXAS STATE UNIVERSITY SEPT/OCT 1983

*BENCHMARKS was produced using Waterloo/SCRIPT

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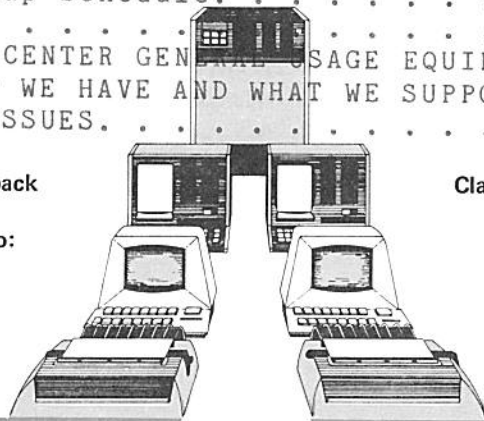
BENCHMARKS Reader/User feedback
is encouraged.

Send all letters, suggestions, etc., to:
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Director of Computer Systems

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Services Available To Users Of The NTSU Computing Facilities

All people mentioned below may be contacted by calling
(817) 565-2324:

Information, Project Numbers, and IDs- Carolyn Goodman in the
Computing Center reception Area, ISB 119.

Newsletter Questions/Contributions/etc. - Claudia Putnam.

Statistical/Research Support (provided for graduate students
and faculty members) - Bob Brookshire, George Morrow,
Claudia Putnam, and Steve Glick.

Non-Research Student Programming Problems - student consultants
from the Computer Science Department are located in GAB
550L. Student consulting provided by the College of
Business is available at the BA Computing Access Facility.

JCL and Debugging Problems - George Morrow.

Pre-Research Counseling, Including Survey Instrument Design -
Bob Brookshire, George Morrow, and Claudia Putnam.

Data Entry to MUSIC, Keypunch Requests and Questions Regarding
Layout of Keypunch Sheets; Interpreting - Betty Grise,
ISB 227.

Test Scoring and Analysis - Betty Grise.

Academic Timesharing Information and/or Problems: AS/8040
MUSIC (McGill University System for Interactive Computing)
information and/or problems, including terminal problems -
Steve Glick. VAX 11/780 information and/or problems - Kim
Stickney. HP 2000 information and/or problems - Jeff
Brooks.

Administrative Applications - Coy Hoggard.

AS/5000 Computer Hardware/Software/Billing Problems - Sandy
Franklin.

JOB Submission and Retrieval - RJE Operators.

Fall Computing Hours

Computing facilities will be open during the following times
throughout the Fall (not applicable to holidays):

Computing Center RJE: 8 AM - Midnight, Monday-Saturday;
Noon-Midnight, Sunday.

ISB 110 Terminal Area: TEMPORARILY CLOSED UNTIL FURTHER NOTICE

College of Business RJE: 8:15 AM - Midnight, Monday-Saturday;
12:15 PM - Midnight, Sunday.

5th Floor GAB: 8 AM - Midnight, Monday-Saturday;
Noon - Midnight, Sunday.

ALTERED HOURS OF OPERATION

The following hours will be in effect over Thanksgiving:

Computing Center RJE	:	CLOSED November 24
ISB Terminal Area (110)	:	TEMPORARILY CLOSED UNTIL FURTHER NOTICE
College of Business RJE	:	CLOSED November 24, 25 OPEN November 26, Noon - Midnight
5th Floor GAB	:	OPEN November 23, 8 AM - 5 PM CLOSED November 24 OPEN November 25, 26, 8 AM - 5 PM

COMPUTER SCIENCE CONSULTING HOURS

The following hours are in effect for the Computer Science Department consultants (GAB 550L) until Sunday, December 11.

SUNDAY	4 - 8 PM
MONDAY	10 AM - 9 PM
TUESDAY	1 - 6 PM and 8-10 PM
WEDNESDAY	10 AM - 1 PM and 2 PM - 10 PM
THURSDAY	10 AM - 12 NOON and 1-10 PM
FRIDAY	9 AM - 11 AM and 2 PM - 4 PM
SATURDAY	2 PM - 4 PM

The only exception to this is that there will be no consulting on Thursday, Friday and Saturday of Thanksgiving week (November 24).

COMPUTING CENTER STATUS REPORT: NOVEMBER, 1983

by

Thomas Wm. Madron, Manager of Computer Services

Since the last issue of BENCHMARKS, a number of things have been taking place in computing at NTSU--mostly good things but also some which are problematic. For example, one good thing is that we have installed a number of new terminals in both the GAB and the BA terminal facilities. The bad news is that the number of computer ports is now less than the number of high use terminals. This is, unfortunately, part of the growing pains of computing at NTSU.

In order to remedy the imbalance between computer ports and terminals we are adding some "protocol converted" ports to the 8040. By using the protocol converted ports it will be possible for "dumb" ASCII terminals (the kind most of us use) to emulate IBM's 3270 terminals. This means that through the use of the protocol converted ports users will have the ability to do full screen editing, among other things. The equipment has not yet arrived to install the planned 96 protocol converted ports, but we will have 24-32 ports on-line on or about November 15. Full documentation for use of the protocol converters will be found elsewhere in this issue and is available separately from the Computing Center.

A second item of considerable interest to many people is the availability of the new HP (Hewlett-Packard) Laser Printer. The Laser printer provides very fast, high quality printed output. It has a number of type fonts available for various purposes and can be used with the batch version of Waterloo Script. The standard paper size is 11 inches by 8.5 inches and for several fonts, including the option which generates all of the characters on the so-called TN print train (see the Waterloo Script manuals), can be printed either horizontally or vertically on a page. The TN option, by the way, uses a Courier type font so it looks more like it came from a Selectric typewriter than from a computer printer. If the output from the Laser printer is copied onto the high quality paper required by the Graduate School, theses or dissertations printed by the Laser printer will be accepted as final copies. Refer to a related article in this issue for more information on the Laser printer.

As many of you know, we will be replacing the current IBM operating system (OS/MVT) with the more modern OS/MVS about the first of the year. We are now preparing user documentation for the changes necessary in procedures required by MVS. It is not too early for those teaching courses requiring IBM documents to call the Computing Center and obtain the document numbers for the equivalent OS/MVS documents. We will make a selected set of the documents available in the public access areas, of course.

As a final note, please bear in mind that a lot of changes are taking place in computing at NTSU which may require some changes in the way we have traditionally operated. We are attempting to make the transition as easy as possible, but some difficulties will undoubtedly be encountered. In order to make it all work, we need your help and indulgence. If you encounter something you don't understand, please give us a call.

LOCAL AREA NETWORK MODEMS

by

Thomas Wm. Madron, Manager of Computer Services

The extension of the wiring used for the Local Area Network is now almost complete. A total of 32 of the 54 buildings on the campus are or will be wired. The remaining buildings will be wired on request (through a procedure yet to be worked out). As indicated in previous memoranda, departments must currently finance the acquisition of LAN modems. Fortunately the price is declining and we hope that will continue in the future.

The LAN modems come basically in two configurations: one will support two terminals (Sytek 20/100) and the other will support eight terminals (Sytek 20/200). The 20/100 currently costs \$1090 less a 10% educational discount. The 20/200 costs \$3750 less 10%. WHEN ORDERING BE SURE TO SPECIFY THE DISCOUNT. The Purchasing Office has a standard Single Source Justification which is attached to each order. The modems should be ordered specifying the following attributes and options:

Sytek 20/100: Two-port PCU
P01 -Asynchronous
U00 - RS-232-C
W00 - 120 VAC
A01 - Midsplit Group A
FOB - NTSU Denton, Texas

Sytek 20/200: Eight-port PCU
P01 - Asynchronous
U00 - RS-232-C
W00 - 120 VAC
A01 - Midsplit Group A
FOB - NTSU Denton, Texas

Depending on your funding, either a spot purchase order or an open market requisition will be used. Check with the Purchasing office.

KNOW YOUR REPRESENTATIVE

The University Computing Council was established in 1981 to function as an advisory body with respect to computing policies, services, physical facilities, and allocation of resources. It is a standing Council, and reports to a Steering Committee composed of the Vice President for Fiscal Affairs, the Vice President for Academic Affairs, the Vice President for Administrative Affairs, and a Representative of the President of the Texas College of Osteopathic Medicine.

The Computing Council is concerned with both current policy matters and long-range planning. An emphasis is placed on policies and procedures to provide and maintain a balance between required computing services and the necessary funding, staff, and space commitments to meet these requirements. The equitable allocation of existing computing services is also of continuing concern.

Academic, administrative, and Computing Center representatives comprise the Computing Council, with the academic representatives serving the dual role of Council members and Academic Computing Coordinators for their respective colleges or schools. The duties of the Academic Computing Coordinators are listed below:

1. Developing, documenting, and updating school or college and departmental computing plans including current and future computing service requirements by course or project. These plans are used by the Council to determine and document University academic computing requirements.
2. Providing advice and assistance to faculty members in the use of computing services and software packages to promote effective and coordinated use of available computing services and facilities.
3. Providing advice and assistance to the Computing Center staff in the development of user guides, software documentation, and seminars.
4. Coordinating, assisting, and controlling departmental or faculty sub-allocations of resources such as terminal and on-line disk storage.
5. Coordinating, assisting, and controlling departmental or faculty acquisition of computing equipment and software (including, micro-computers and word processing systems).

6. Other duties as agreed within the Computing Council.

The administrative computing representatives are individuals who, because of their positions, are normally responsible for the development and coordination of major administrative computing information systems. Other members of the Council include representatives from the Computer Science Department and the Accounting and Information Systems Department; The Director of Computer Systems, the Manager of Computing Services, and the Manager of Information Systems (all non-voting, ex-officio members); and several additional members who have expertise otherwise not available on the Council.

It is particularly important that all members of the academic community be aware of their particular representative on the Council, so that any requests or questions that would be appropriate for the Council to consider can be heard. Following is a list (as of October 1983) of all Computing Council members :

Academic Computing Coordinators

Dr. Neal Tate, Chair, College of Arts and Sciences
Mr. Cengiz Capan, College of Business Administration
Dr. William Luker, School of Community Service
Dr. Paul Schlieve, College of Education and Home Economics
Dr. Hugh Kirkpatrick, Graduate School and Faculty Research
Dr. Don Cleveland, School of Library and Information Sciences
Dr. Paul Dworak, School of Music
Dr. Gerald Knezek, Department of Computer Sciences
Dr. Jon Clark, Department of Accounting and Information Systems
Dr. Michael Crews, Home Economics
Mr. Verney Sallee, TCOM, Department of Physiology

Administrative Computing Coordinators

Academic Affairs Systems

Ms. Joneel Harris, Admissions and Records
Mr. Melvin Gouge, Student Affairs and Financial Aid
Dr. Jimmie Naugher, Office of Planning and Analysis
Dr. Peter Witt, Research

Fiscal Affairs Systems

Mr. Steve Rohn, Controller, Payroll, Budgets
Ms. Pat Fine, Purchasing, Housing, Bookstore and Other Fiscal

Administrative Affairs and Other Systems

Mr. Steve Miller, Personnel, Physical Plant, Facilities, Advancement and Others

Medical Affairs Systems

Mr. Steven R. Russell, Business Manager, TCOM Administrative Systems

Other Representatives (Non-Voting)

Mr. Richard Harris, Director of Computer Systems
Dr. Tom Madron, Manager of Academic Computing Services
Mr. Coy Hoggard, Manager of Administrative Computing Services
Dr. Jim Mackey, Hardware Specialist - Physics Department
Dr. Larry Luce, Director of Facilities Planning & Utilization
Mr. Ray McFarlane, Director of Facilities Planning & Construction

Mr. Tom Newell, Communications Manager

UNIVERSITY COMPUTING COUNCIL STANDING COMMITTEES
VOTING MEMBERS (1984-1985)

Planning Committee

- | | |
|------------------------|-----------------|
| • Cengiz Capan (Chair) | • Steve Rohn |
| • Don Cleveland | • Verney Salee |
| • Bill Floyd | • Paul Schlieve |
| • Joneel Harris | • Neal Tate |
| • Gerald Knezek | • Peter Witt |

Resource Allocation

- | | |
|--------------------------|----------------|
| • Jimmie Naugher (Chair) | • Bill Luker |
| • Jon Clark | • Steve Miller |
| • Michael Crews | • Steve Rohn |
| • Gerald Knezek | |

Academic Software Priorities Committee*

- | | |
|---------------------|-----------------|
| • Jon Clark (Chair) | • Bill Luker |
| • Paul Dworak | • Paul Schlieve |
| • Gerald Knezek | • Neal Tate |

Microcomputer/Office Automation Policies Committee

- | | |
|----------------------|------------------|
| • Steve Rohn (chair) | • Melvin Gouge |
| • Jon Clark | • Gerald Knezek |
| • Don Cleveland | • Jimmie Naugher |
| • Michael Crews | • Paul Schlieve |
| • Pat Fine | |

*The Academic Software Priorities Committee is the group that all requests for purchase of software will be referred to from this time on.

LET ACADEMIC COMPUTING SERVICES COME TO YOU

Academic Computing Services has traditionally presented short courses and workshops on a variety of topics once or twice a semester. These courses are accessible, free of charge, to anyone on the campus who wishes to attend. Because of this, it is usually not possible to accomodate someone's entire class, unless, of course, it is very small. If you would like a short course to be presented to your class, contact Academic Computing Services, 565-2324. The following is a partial list of courses that have been presented in the past.

- | | |
|---|---|
| • Introduction to Computing Center Facilities | • Interpretation of NTSU Test Scoring Program |
|---|---|

- Introduction to Waterloo/Script
- Introduction to MUSIC for programmers
- Introduction to statistical packages
- Introduction to the VAX mini-computers
- Advanced Multivariate Statistics
- Advanced Statistical Packages
- Introduction to Terminals
- Introduction to MUSIC
- Introduction to MUSIC/SCRIPT
- Introduction to SPSS
- Introduction to SAS
- Introduction to BMDP
- Introduction to SPSSX
- Introduction to the HP 2000
- Advanced Topics in MUSIC

NEWS WITHOUT NEWSPRINT

With the phasing out of the keypunch machines and the addition of yet two more computers that do not have printers, you the user must make the transition from being kept informed of the latest happenings on printed paper, to reading NEWS, MAIL and HELP files on what ever interactive operating system you happen to be using (MUSIC, CMS, VAX/VMS, the HP 2000). It is no longer possible to post notices in keypunch/terminal and dispatch areas and expect all users to read them, many people now work from home.

It is true that this document you are reading is a major source of information with regard to happenings in computing at NTSU, however, it is somewhat dated, in many cases, by the time it is printed. The only sure-fire way, therefore, to get the latest information on what is going on with the computing facilities is to read the NEWS files frequently, create yourself a mailbox on MUSIC so that you can be contacted personally, should the need arise (enter HELP MAIL for more information), and look at HELP files if you have a question about a particular procedure (the OPER help file <HELP OPER> is a particularly valuable file on MUSIC concerning the operational rules and regulations for using the NAS/8040 computer, which MUSIC runs on). Remember, you are the one who is ultimately responsible for keeping yourself informed on topics that may affect you.

METRO NUMBER AVAILABLE FOR LONG DISTANCE COMPUTER ACCESS

At long last, 8 metro lines have been installed and can be used to access any NTSU computer that is available over the Local Area Network. These lines were installed, primarily, to allow communication between TCOM and NTSU, so we must ask that they be used judiciously. The telephone number is available, upon request, from the Computing Center (565-2324).

NEW DISK DRIVES MAY AFFECT ACAD00 USERS

Since the move of the computing facilities to the 5th floor of the GAB, on September 16 of this year, all the disk drives available to

general users of the AS/8040 are 3350 type drives. This means that if you have data stored on ACAD00, and if you have been using an IBM utility that requires a device type in certain control fields, you will need to change those fields from 3330-1 to 3350. For example:

```
IEHLIST: LISTPDS DSNAME=xxxxxxxxx,VOL=3350=yyyyyy
```

```
IEHMOVE: COPY PDS=xxxxxxxxx,TO=3350=yyyyyy=FROM=3350=zzzzzz
```

TROUBLESHOOTING PROBLEMS WITH THE LOCAL AREA NETWORK by Kim Stickney

It is imperative that computer users at NTSU become aware of certain problems that occur from time to time with the Local Area Network (LAN) and, in many cases, learn to deal with them. Developing such a skill can save you both time and frustration when accessing the various computers around campus.

The LAN in use here at NTSU is based on what is called a Broad-band Cable TV Data Distribution system. The particular hardware we use is manufactured by the Sytek Corporation. There are a lot of special boxes all interconnected via CATV cables. These boxes are called Packet Communication Units, or PCUs, and each contains a microprocessor programmed to understand a special Collision Detection protocol which allows the PCUs to meaningfully communicate with each other. Each PCU is connected to one of two things: either a computer, or a terminal. In order for the PCUs to talk to each other, they must each have a unique "address." For example when calling VAX system A #CALL A780, the A780 is an example of such an address. Addresses are in the hexadecimal radix (base 16); the "A" in the above example is actually the hex digit A.

Why do you care about all this? Because, when you call a computer such as A780, and it appears the the "system is down", it is often only the PCU that is down. Normally, an automatic "rotor" or "autohunt" mechanism transfers you to the next available address if the line is truly busy. If there is a problem with a PCU, however, it very likely will not transfer you to the next available line. You can, however, manually override this difficulty by calling address A781, A782, etc. or B781, B782 etc. . Usually you will find one that works, very quickly. The same technique can be applied to the AS/8040, so that you can call 8041,8042, ... ,804A,804B, ... 804F, 8050, 8051, ... 805A, 805B ... 805E, and 8300,8301 for 300 baud dial-up lines.

Other things can go wrong with PCUs. The command which puts you back in touch with the LAN prompt (#, or sometimes, the English pound sign), usually <ESC><RETURN>, can be changed by a privileged user, sometimes inadvertantly. The address of the PCU itself may get changed similarly, leading to the extremely confusing result of having two PCUs at the same address (two users trying to use the same line).

Computing Center personnel can usually help you get out of such jams. However, your becoming familiar with these principles and

possible pitfalls can save you time and frustration in most situations involving minor LAN malfunctions.

VTERM PROGRAM AVAILABLE TO DEPARTMENTS WITH TI PCS

The TI-VTERM program, which allows TI professional computers to fully emulate a VT100 terminal, is now available to departments and individuals who have TI Professional Computers purchased by the State of Texas. TI-VTERM is marketed by Saturn Consulting Group (SCG) of New York, and was originally written for IBM PCs. They have modified the original product for us, and are continuing to upgrade it. Presently VTERM has file uploading and downloading capabilities similar to the COMTTY program marketed by TI, but an upgraded version with more extensive uploading and downloading facilities is expected to become available in a few weeks.

NTSU has a site license with SCG, which means that copies are available, free of charge, to the aforementioned groups. The conditions for getting these copies are as follows:

- Your TI PC must be purchased by the State of Texas for use at or for North Texas State University.
- You can get one copy of VTERM for every PC that you have that meet the conditions mentioned above.
- You must furnish an MS/DOS formatted diskette for every copy of VTERM you want.
- One copy of the VTERM documentation per department will be made for you. Other copies may be made from this, if you so desire.

Individuals who are interested in obtaining a copy of VTERM for their own personal use should contact:

Saturn Consulting Group
611 Broadway, Room 426 B
New York, New York 10003
Attention: John Cool
Phone: (212) 777-6707

FULL SCREEN EDITING TO GENERAL COMPUTER USERS SOON TO BE AVAILABLE

NTSU has purchased some 3270 protocol converters which allow ASCII terminals (such as VT100s, MIMES, TELEVIDEOS) to emulate IBM 3270 type terminals. They should be installed and functional by the end of November. This will allow you to use MUSIC's FULL SCREEN EDITOR among other things. Consult the section of the MUSIC Manual on full screen editing, page 176, for more information on this topic.

Reproduced below is a user reference card for the 3270 protocol converters to be published in November.

USING THE 3270 PROTOCOL CONVERTER AT NTSU

The 3270 protocol converter allows ASCII terminals (i.e., VT100, MIME, Televideo) to access any system running under VM/370 as a remote 3270 device. The 3270 protocol provides for full screen editing as well as other advantages inherent in full-screen devices. Users of CMS or MUSIC, for example, can use the full screen editor, rather than the line editor. (The full screen editor allows changes to be made directly on the screen, rather than with the 'change' command). Users of ADABAS/COM-LETE can utilize full screen data entry/retrieval. Users of any VM/370 system which has Program-Function (PF) key capability can use the PF Keys with the protocol converter.

With most terminals, however, certain "escape" sequences must be entered to send the PF key and other instructions to the computer. This document lists those sequences for the ASCII terminals on campus.

To access the protocol converter, issue the following command from the Local Area Network (LAN).

CALL 3270

you will be prompted with: CALL COMPLETED TO 3270,nn
(where nn is the address of your port)

At this time, enter a carriage return (Just hit and release the 'return' key). You will then be prompted with:

ENTER TWO-DIGIT TERMINAL TYPE OR TYPE M FOR MENU :

you should then enter the two-digit code shown below.

After a few moments, you will see the VM/370 Logo appear on the screen. Briefly depressing the 'return' key will cause the logo to disappear and enable you to proceed with the logon procedure as described in the Local Area Network Reference Card.

Most terminals on campus emulate a VT100, which is terminal type '02'. Below is a list of the terminals on campus and their 3270 Protocol Converter 2-digit code.

Terminal Type	3270 Code	Emulation Type
Televideo 970	02	VT100
MIME 740	02	VT100
MIME 2a	04	VT52
Micro Term ACT-5a	05	ACT 5
TRS Dumb Terminal	06	ADDS REGENT 25
LSI ADM 3a, 5	09	ADM 3a

HINTS FOR USING THE PROTOCOL CONVERTER

If your terminal appears to 'lock up', enter the STATUS DISPLAY sequence (listed in the appropriate chart below). The protocol converter will report the session status in the top left corner of the terminal screen. The status report will look like this:
PORT 01 READY, SYS AV
If this is the status, then all is well. If, however, the report says:
PORT 01 LOCKED, SYS AV
your converter port is locked. To remedy the situation, enter the RESET sequence listed in the chart below. Then the status report should indicate: PORT 01 READY, SYS AV
If, on the other hand, the report indicates:
PORT 01 READY, NO SYS
then the system is down, and you must wait for the system to recover before proceeding.

IMPORTANT: If you close your network session without properly logging off, the next person to access your port on the protocol converter WILL BE SIGNED ON TO YOUR ID CODE.
For this reason, it is of the highest importance that you log off before closing your session.

ESCAPE AND CONTROL SEQUENCES

Note that the sequence 'esc 01', as one example, is issued by pressing and releasing the 'escape' key, then the numeral 0, then the numeral 1. The sequence 'control R', for example, is issued by pressing the 'control' key and the 'R' key at the same time. Also note that the case (upper or lower) of the alpha characters in the escape and control sequences is critical. Use of an upper case character when a lower case character is called for will not work.

USE OF PROGRAM FUNCTION KEYS (PFK) WITH THE PROTOCOL CONVERTER

The functions of the various keys can be changed by creating an EDITOR COM file. For information on this, and for the default values of the PFK's, consult the MUSIC Manual (pp. 40-42, 176-181). You may also enter the command SHOW PFK from the MUSIC Editor; this will print the current commands associated with the PFK's.

ENTERING DATA WITH THE FULL-SCREEN EDITOR

When entering text, use the 'new line' key rather than the 'return' key-- use the 'return' key only when ready to transmit a 'page' of data. This way, each page of data is transmitted only at the end of each page of data or page of changes. This will save communication time.

TELEVIDEO 970

<u>3270 Function</u>	<u>Key Sequence</u>	<u>3270 Function</u>	<u>Key Sequence</u>
ATTN	esc A	PA1	F11
Back Tab	esc Tab	PA2	F12
Clear	Clear Space	PA3	F13
Tab	Tab	PF1	F1
Copy	esc esc =	PF2	F2
Cursor Down	Down Arrow	PF3	F3
Cursor Up	Up Arrow	PF4	F4
Cursor Left	Left Arrow	PF5	F5
Cursor Right	Right Arrow	PF6	F6
Cursor Select	esc esc @	PF7	F7
Delete Character	Delete	PF8	F8
Device Cancel	esc esc \	PF9	F9
CLOSE LAN SESSION	esc esc *	PF10	F10
DUP	esc esc "	PF11	Shift F1
Enter	Return	PF12	Shift F2
Erase eof	CE	PF13	Shift F3
Erase Input	Shift CE	PF14	Shift F4
FM	Control F	PF15	Shift F5
Force Select/Menu	esc esc M	PF16	Shift F6
Home	Home	PF17	Shift F7
Insert Mode	Char Insert	PF18	Shift F8
New Line	Line Feed	PF19	Shift F9
Reset	F16	PF20	Shift F10
Screen Refresh	esc esc V	PF21	Shift F11
Status Display	Control A	PF22	Shift F12
System Request	esc S	PF23	Shift F13
		PF24	Shift F14

NOTE: to enable the PF keys on the numeric keypad, type:
esc PFK

VT 52

<u>3270 Function</u>	<u>Key Sequence</u>	<u>3270 Function</u>	<u>Key Sequence</u>
ATTN	esc esc A	PA1	esc [
BACK TAB	esc TAB	PA2	esc]
CLEAR	control C	PA3	esc esc P 3
TAB	TAB	PF1	PF1 or esc 1
COPY	esc esc =	PF2	PF2 or esc 2
CURSOR DOWN	Down Arrow	PF3	PF3 or esc 3
CURSOR UP	Up Arrow	PF4	PF4 or esc 4
CURSOR LEFT	Left Arrow	PF5	esc 5
CURSOR RIGHT	Right Arrow	PF6	esc 6
CURSOR SELECT	esc esc @	PF7	esc 7
DELETE CHARACTER	delete	PF8	esc 8
DEVICE CANCEL	esc esc \	PF9	esc 9
CLOSE LAN SESSION	esc esc *	PF10	esc 0
DUP	esc esc "	PF11	esc -
ENTER	Return	PF12	esc =
ERASE EOF	esc ,	PF13	esc esc 13
ERASE INPUT	esc .	PF14	esc esc 14
FM	control F	PF15	esc esc 15
FORCE SELECT/MENU	esc esc M	PF16	esc esc 16
HOME	esc esc H	PF17	esc esc 17
INSERT MODE	esc esc I	PF18	esc esc 18
NEW LINE	line feed	PF19	esc esc 19
RESET	control R	PF20	esc esc 20
SCREEN REFRESH	esc esc V	PF21	esc esc 21
STATUS DISPLAY	Control A	PF22	esc esc 22
SYSTEM REQUEST	esc esc Q	PF23	esc esc 23
		PF24	esc esc 24

ADDS REGENT 25

<u>3270 Function</u>	<u>Key Sequence</u>	<u>3270 Function</u>	<u>Key Sequence</u>
ATTN	esc esc A	PA1	esc P 1
BACK TAB	control W	PA2	esc P 2
CLEAR	erase	PA3	esc P 3
TAB	Control I	PF1	esc 0 1
COPY	esc esc =	PF2	esc 0 2
CURSOR DOWN *	Down Arrow	PF3	esc 3
CURSOR UP	Up Arrow	PF4	esc 4
CURSOR LEFT	Left Arrow	PF5	esc 5
CURSOR RIGHT	Right Arrow	PF6	esc 6
CURSOR SELECT	esc esc @	PF7	esc 7
DELETE CHARACTER	control D	PF8	esc 8
DEVICE CANCEL	esc esc \	PF9	esc 9
CLOSE LAN SESSION	esc esc *	PF10	esc 1 0
DUP	esc esc "	PF11	esc esc 11
ENTER	Return	PF12	esc esc 12
ERASE EOF	esc esc E F	PF13	esc esc 13
ERASE INPUT	esc esc E I	PF14	esc esc 14
FM	control F	PF15	esc esc 15
FORCE SELECT/MENU	esc esc M	PF16	esc esc 16
HOME	Home	PF17	esc esc 17
INSERT MODE	esc esc I	PF18	esc esc 18
NEW LINE	control N	PF19	esc esc 19
RESET	control R	PF20	esc esc 20
SCREEN REFRESH	esc esc V	PF21	esc esc 21
STATUS DISPLAY	Control B	PF22	esc esc 22
SYSTEM REQUEST	esc esc Q	PF23	esc esc 23
		PF24	esc esc 24

ADM 3a

<u>3270 Function</u>	<u>Key Sequence</u>	<u>3270 Function</u>	<u>Key Sequence</u>
ATTN	esc esc A	PA1	esc P 1
BACK TAB	esc TAB	PA2	esc P 2
CLEAR	control Z	PA3	esc P 3
TAB	Control I	PF1	esc 1
COPY	esc esc =	PF2	esc 2
CURSOR DOWN *	Down Arrow	PF3	esc 3
CURSOR UP	Up Arrow	PF4	esc 4
CURSOR LEFT	Left Arrow	PF5	esc 5
CURSOR RIGHT	Right Arrow	PF6	esc 6
CURSOR SELECT	esc esc @	PF7	esc 7
DELETE CHARACTER	control D	PF8	esc 8
DEVICE CANCEL	esc esc \	PF9	esc 9
CLOSE LAN SESSION	esc esc *	PF10	esc 0
DUP	esc esc "	PF11	esc esc 11
ENTER	Return	PF12	esc esc 12
ERASE EOF	esc ,	PF13	esc esc 13
ERASE INPUT	esc .	PF14	esc esc 14
FM	control F	PF15	esc esc 15
FORCE SELECT/MENU	esc esc M	PF16	esc esc 16
HOME	esc esc H	PF17	esc esc 17
INSERT MODE	esc esc I	PF18	esc esc 18
NEW LINE	control N	PF19	esc esc 19
RESET	control X	PF20	esc esc 20
SCREEN REFRESH	esc esc V	PF21	esc esc 21
STATUS DISPLAY	Control C	PF22	esc esc 22
SYSTEM REQUEST	esc esc Q	PF23	esc esc 23
		PF24	esc esc 24

* On the ADM 3a, the arrow keys must be depressed with the control key.

MICRO-TERM ACT-V

<u>3270 Function</u>	<u>Key Sequence</u>	<u>3270 Function</u>	<u>Key Sequence</u>
ATTN	esc esc A	PA1	esc esc P 1
BACK TAB	control U	PA2	esc esc P 2
CLEAR	control C	PA3	esc esc P 3
TAB	Control I	PF1	esc esc 0 1
COPY	esc esc =	PF2	esc esc 0 2
CURSOR DOWN	control J	PF3	esc esc 3
CURSOR UP	control K	PF4	esc esc 4
CURSOR LEFT	control H	PF5	esc esc 5
CURSOR RIGHT	Control L	PF6	esc esc 6
CURSOR SELECT	esc esc @	PF7	esc esc 7
DELETE CHARACTER	control D	PF8	esc esc 8
DEVICE CANCEL	esc esc *	PF9	esc esc 9
CLOSE LAN SESSION	esc esc "	PF10	esc esc 10
DUP	esc esc "	PF11	esc esc 11
ENTER	Return	PF12	esc esc 12
ERASE EOF	esc esc E F	PF13	esc esc 13
ERASE INPUT	esc esc E I	PF14	esc esc 14
FM	control F	PF15	esc esc 15
FORCE SELECT/MENU	esc esc M	PF16	esc esc 16
HOME	control B	PF17	esc esc 17
INSERT MODE	esc esc I	PF18	esc esc 18
NEW LINE	control N	PF19	esc esc 19
RESET	control R	PF20	esc esc 20
SCREEN REFRESH	esc esc V	PF21	esc esc 21
STATUS DISPLAY	esc esc Q	PF22	esc esc 22
SYSTEM REQUEST	control I	PF23	esc esc 23
		PF24	esc esc 24

USING THE HEWLETT-PACKARD 2680A LASER PRINTER UNDER VM/370 SYSTEMS

The following document is a reproduction of a reference card for the laser printer that will be published in the latter part of November.

This reference card assumes you know the rudiments of JCL, (i.e., job card structure, etc.). Also, most examples below assume that you will be using WATERLOO SCRIPT when requesting 8.5x11 letter-type output. If you wish to use IEBGENER or some other utility, the procedure (over riding the SYSPRINT DD card) is the same as shown below.

The Hewlett-Packard 2680a Laser Printer provides high quality computer-generated output. The 2680 is very flexible in that you may select one of several character styles (fonts), and various character-per-inch (cpi) settings. Along with this flexibility is the need to give the Laser Printer special instructions and thus inform it about the desired output. This document details the procedures for obtaining that output.

The Laser Printer output is controlled by overriding the 'SYSPRINT' DD card in the job stream. Below is an example of the required set-up to use the courier type font, TN style print train, with 90 degree rotation, and 10 characters per inch. All of these parameters are discussed below. When overriding 'SYSPRINT', you are effectively issuing a call to an 'environment file'. Environment files contain the instructions which tell the 2680 how to print the data.

When talking about the TN style print font, or the PICA font, then, we are actually talking about the TN environment and the PICA environment.

Rotated and Unrotated output will be discussed below. Rotated output (always 90 degrees) refers to output which is printed as a standard 8.5x11 letter would be. That is, the 8.5" sides are the top and bottom, and the 11" sides are the left and right sides. Unrotated output refers to standard 132 column wide output which is longer horizontally than vertically.

```
//LASRTST JOB (1234-5678,:10,2),MYNAME
// EXEC SCRIPT
//SYSPRINT DD SYSOUT=(A,,TN01)      <---'TN01' calls the desired font
```

Note that 'TN01' is made of the upper-case letters T and N, followed by the NUMERALS 0 (zero) and 1 (one).

The third positional parameter in the SYSPRINT step calls for the TN01 font. The middle parameter in this step is not used; this MUST be indicated by the second comma.

STANDARD OUTPUT This is an example of the standard environment.

No special parameters are needed for standard printed output, and thus the SYSPRINT DD card is not over-ridden. This output is the industry standard 132 columns wide. This font is NOT the same as the IBM PN print train. Because of this, the vertical bar (|) is printed as an exclamation point (!) and the not sign (~) is printed as a carat (^). For this reason, you may wish to use the PN environment which is described below.

PN01 THIS IS AN EXAMPLE OF THE PN01 ENVIRONMENT.

PN01 is the standard IBM print train environment file. Its characteristics are:

- 13 characters per inch
- 0 degree rotation
- 132 characters per line (Max 132)
- 66 lines per page

is called with: //SYSPRINT DD SYSOUT=(A,,PN01)

TN01 This is an example of the TN01 environment.

TN01 is the standard text print train which WATERLOO SCRIPT supports. Its characteristics are:

- 10 characters per inch
- 90 degree rotation
- 75 characters per line (Max 77)
- 66 lines per page
- Standard 'Courier' style characters
- is called with: //SYSPRINT DD SYSOUT=(A,,TN01)

TNS1 THIS IS AN EXAMPLE OF THE TNS1 environment.

TNS1 is the standard text print train, except that its characters are smaller to allow for 132 columns on an unrotated page. Its characteristics are:

- 13 characters per inch
- 0 degree rotation
- 132 characters per line (Max 132)
- 66 lines per page
- is called with: //SYSPRINT DD SYSOUT=(A,,TNS1)

PI01 This is an example of the PI01 environment.

PI01 is the standard PICA type font. Although certain TN-Train characters are not available in this environment, this will normally not be a problem. Its characteristics are:

- 12 characters per inch
- 90 degree rotation
- 90 characters per line (Max 77)
- 66 lines per page
- is called with: //SYSPRINT DD SYSOUT=(A,,PI01)

EL01 *This is an example of the EL01 environment.*

EL01 is the standard elite type font, and is not fully supported by script. Although certain TN-train characters are not available on this print train, this will normally not be a problem. Its characteristics are:

12 characters per inch
0 degree rotation
90 characters per line (Max 90)
66 lines per page
is called with: //SYSPRINT DD SYSOUT=(A,,EL01)

SC01 *This is an example of the SC01 environment.*

SC01 is elite type (12 cpi) in the script (cursive) font. Again, although certain characters on the TN-train are not available, this will normally not be a problem. Its characteristics are:

12 characters per inch
0 degree rotation
90 characters per line (Max 90)
66 lines per page
Cursive type
is called with: //SYSPRINT DD SYSOUT=(A,,SC01)

SPECIAL PURPOSE ENVIRONMENTS

HA01 **example of the HA01 environment.**

HA01 environment provides large characters which are suitable for preparing overhead transparencies. Since HA01 is proportionally spaced, underlining and centering will not work. Its characteristics are:

5 characters per inch (approx.)
0 degree rotation
49 characters per line
22 lines per page
is called with: //SYSPRINT DD SYSOUT=(A,,HA01)

DC01

This is an example of the DC01 environment.

DC01 is a document type font which is used frequently in commercial typesetting applications. This font is proportionally spaced, which causes problems when underlines or text with multiple imbedded blanks are encountered. Since proportional spacing is not supported by the software which drives the laser printer, it is available but useful only in applications where neither underlining nor multiple imbedded blanks are involved. Its characteristics are:

Proportional spacing

0 degree rotation

90 characters per line (Max 90) (Approximate)

66 lines per page

is called with: //SYSPRINT DD SYSOUT=(A,,DC01)

OBTAINING MULTIPLE COPIES OF YOUR JOB ON THE 2680

Two different ways exist to obtain multiple copies of your output. First, you may request the psuedo environment file CPnn, where nn is the number of copies. For example, if five copies are desired, and the standard HP environment is used, specify:

```
//LASRTST JOB (1234-5678,:05,1),MYNAME
// EXEC SCRIPT
//SYSPRINT DD SYSOUT=(A,,CP05)
```

Note that the parameter 'CP05' MUST consist of 4 digits (i.e., 5 copies is requested 'CP05', NOT 'CP5').

Currently, multiple copies cannot be requested when an environment file is also needed, since you may only specify SYSPRINT once within the current step within the job.

At the present time, the only way to get multiple copies when also calling an environment file is in the Job Card. The 'copies' parameter may be used to request multiple listings in these cases. For example:

```
//LASRTST JOB (1234-5678,:05,1,,,5),MYNAME
// EXEC SCRIPT
//SYSPRINT DD SYSOUT=(A,,TN01)
```

The example above requests 5 copies of a job which also calls for the TN01 environment. We request that you request multiple copies only when absolutely necessary, most importantly to properly share resources. Your judicious use of multi-copy jobs is appreciated.

ROUTING OUTPUT TO THE LASER PRINTER

When submitting jobs from cards, CMS, or when not using the 'return' parameter from music, follow the example below, substituting the desired environment file in the SYSPRINT step.

```
//LASRTST JOB (1234-5678,:10,2),MYNAME
/*ROUTE PRINT LASER
// EXEC SCRIPT
//SYSPRINT DD SYSOUT=(A,,TN01)
```

<--The word 'PRINT' MUST
begin in column 10

If using MUSIC OSJR, do not include a 'ROUTE' card in the job stream. Rather, issue the route command in the customary fashion, but additionally type the desired destination on the route command. For example:
ROUTE JOB=123,TO='LASER'

OSJR will respond with 'ROUTE COMMAND SUBMITTED'.

SHAZAM, IT'S HERE!

SHAZAM is here and ready to run. All you need to do is to include the statement: // EXEC SHAZAM in your program. The manual is available on an OS disk file, and you may get a copy by running the following program:

```
// EXEC PGM=IEBGENER,REGION=256K
//SYSPRINT DD SYSOUT=A
//SYSIN DD DUMMY
//SYSUT2 DD SYSOUT=(A,,PI01),DCB=BLKSIZE=80,LRECL=80,RECFM=FBA)
//SYSUT1 DD DSN=RSRCH.D0683.P8602.SHAZAM.MANUAL,DISP=SHR
```

"What is SHAZAM, and why may I want to use it?," you may be asking yourself. Well, statistics breath, SHAZAM is a statistical package developed by Kenneth J. White at the University of British Columbia, Canada. It contains the following types of facilities:

- | | |
|---|---------------------------------|
| • Data management | • Box-Cox regression |
| • Generation of data | • TOBIT analysis |
| • Data transformations | • Multiple equation systems |
| • OLS regression | • Nonlinear regression |
| • Restricted regression | • Principal Components analysis |
| • Regression with householder transformations | • Factor Analysis |
| • Gram-Schmidt regression | • Forecasting |
| • Autoregressive models | • Computation of price indexes |
| • Distributed-LAG models | • Simple Analysis of variance |
| • Multivariate PROBIT and LOGIT analysis | • Histograms |
| | • Graphs |

The manual contains several examples of the use of SHAZAM, and an excellent bibliography on the statistical methods it performs.

THE RIGHT JCL

The July/August newsletter, the article "Using the Computer for Research: Part XI" had the following two tables in it. Please examine the tables carefully and make the appropriate corrections.

EXAMPLE 3: MOVING DATA FROM CARDS TO MUSIC

```
//IDCODE JOB (xxxx-yyyy,:10,1),NAME
// EXEC PGM=IEBGENER
//ROUTE PUNCH MUSIC (note that the word
//SYSIN DD DUMMY "punch" must begin in
//SYSPRINT DD SYSOUT=A column 10)
//SYSUT2 DD SYSOUT=B,DCB=BLKSIZE=80
//SYSUT1 DD *
.
.
data cards go here
.
// STUDENT
(Use one of the pink 'student' or 'faculty' cards
available in the RJE areas)
```

EXAMPLE 4: MOVING DATA FROM CARDS TO AN OS-DISK PACK

```
//IDCODE JOB (xxxx-yyyy,:10,1),NAME
// EXEC PGM=IEBGENER
//SYSIN DD DUMMY
//SYSPRINT DD SYSOUT=A
//SYSUT2 DD DSN=USER1.Dxxxx.Pyyyy.MYDATA,DISP=(NEW,KEEP),
// SPACE=(1600,1000,100,(RLSE)),VOL=SER=ACADnn,
// DCB=(LRECL=80,RECFB=FB,BLKSIZE=1600)
//SYSUT1 DD *
.
.
data cards go here
.
// STUDENT
(Use one of the pink 'student' or 'faculty' cards
available in the RJE areas)
```

* * * * *

* O P E R A T I O N S *

* * * * *

Backup Schedule for OS/MVT

OS/MVT disk packs (Academic and Administrative) are backed up daily, Tuesday through Saturday, from 4-6:30 AM, and Sunday from Midnight to 3 AM. A backup of all the operating systems and their contents is done once every two weeks at some low activity period over the weekend.

Computing Center RJE Reorganized

The Computing Center's Information Science Building Output Area and RJE Station have moved. All printed and punched output routed to 'LOCAL', 'SPECIAL' or 'LASER' may now be picked up at the pigeon-holes or the window located in the hallway just inside the north entrance to the ISB.

Printed output should normally be picked up within 24 hours after it is printed. Standard output will be held for 7 days and disposed of after that time. If you are unable to pick up your output within this period, make arrangements to have someone pick it up for you. To obtain job or system status information, call 565-2324.

The language and message manuals that were formally available in room 134 of the ISB have been moved to the Information Science Library, near the card catalogues. The sample JCL set-ups that were posted in room 134 will be moved to the Computing Center's Science Library Terminal, room 110.

The DIABLO printer will be available on a sign-up basis at the ISB output window through most of the Fall semester. After this the Diablo will be moved to a public access site in Matthews Hall.

Foreign Tapes and the TMS

The automated tape library management system (TMS) that is used at NTSU on the NAS/8040 computer makes it necessary for people who have received tapes from outside sources to have them copied to another tape, in the TMS, before they can access them. The following procedure has been established to facilitate the interface between the user with an outside tape and TMS.

1. Determine exactly what you want to do with the data on the tape.

- a) If you want the data transferred to a MUSIC file or disk data-set, you do not need to have your tape entered into the TMS.
 - b) If you want to access the tape only once, you do not need to have the tape copied into the TMS.
 - c) If you have any questions about using a foreign tape outside of TMS, contact Academic Computing Services (565-2324).
 - d) Any other use will necessitate making a copy of your tape into the TMS.
2. Fill out a "Request for Tape Copies" form, available from the dispatch area near the north entrance to the ISB or from the Computing Center reception area (ISB 119). You need to have your tape and whatever information you have about it with you.
 3. Wait approximately 24 hours for the tape to be copied (not applicable to weekends, or to tapes with "problems").
 4. Pick up the tape from the reception area of the Computing Center.

Once this has been accomplished, you should run the following job to determine the status of your TMS tape. This job should be run at least once or twice a semester. THIS IS VERY IMPORTANT, SINCE TMS TAPES EXPIRE AND ARE ERASED!!!

```
//jobname JOB (xxxx-yyyy,:01),'your name'
// EXEC   TMSINFO
//SYSIN DD *
VOL=volser
/*
```

If you want the life of your TMS tape extended, contact Academic Computing Services, and ask for an update to be made to the TMC.

If you have any other questions about using TMS, consult HELP OPER while logged on to MUSIC or contact Academic Computing Services.

AS/5000 Performance Statistics for August, September

August Performance Summary *

System Type	Operating Hours Scheduled (OHS)	Maintenance Hours Planned (MHP)	Production Hours Planned (PHP)	Maintenance Hours Unplanned (MHU)	Actual Production Hours (APH)	System Uptime (SU)
VM/SP	744	3.15	740.85	14.98	725.87	98.0%
MUSIC	744	24.67	719.33	22.51	696.82	96.9%
OS/MVT	653	2.37	650.63	28.00	622.63	95.7%
COMPLETE	279	1.62	277.38	13.65	263.73	95.1%
ADABAS	279	1.67	277.33	13.89	263.44	95.0%

Lost Productivity Hours can be contributed to the following key causes*:

CPU, Tape, and Disk Subsystems (NAS)

1. Counter Failure in Channel 3	9.10 Hours
2. 7330 DASD Failures	4.51 Hours
3. Scheduled Maintenance	2.37 Hours
TOTAL	15.98 Hours

Terminal Control Systems (MEMOREX)

1. 1270 TCU Malfunctions	12.83 Hours
--------------------------	-------------

Miscellaneous

1. Undetermined Causes for System Restarts	4.29 Hours
2. Disconnect 1270 TCU from Channel	0.98 Hours
3. COM-LETE/ADABAS Program Maintenance	0.10 Hours
TOTAL	5.37 Hours
GRAND TOTAL	34.18 Hours

September Performance Summary *

System Type	Operating Hours Scheduled (OHS)	Maintenance Hours Planned (MHP)	Production Hours Planned (PHP)	Maintenance Hours Unplanned (MHU)	Actual Production Hours (APH)	System Uptime (SU)
VM/SP	384	10.37	373.63	2.81	370.82	99.2%
MUSIC	384	36.13	347.87	3.68	344.19	99.0%
OS/MVT	356	10.37	345.63	4.08	341.55	98.8%
COMPLETE	149	4.92	144.08	3.23	140.85	97.8%
ADABAS	149	14.92	134.08	2.82	131.26	98.0%

Lost Productivity Hours can be contributed to the following key causes*:

CPU, Tape, and Disk Subsystems (NAS)

1. 7330 DASD Failures 2.85 Hours

Terminal Control Systems (MEMOREX)

1. 1270 TCU Malfunctions 0.43 Hours

Miscellaneous

1. Undetermined Causes for System Restarts 1.40 Hours
 2. Discontinue AS/5000 Operations 21.00 Hours
 3. COM-LETE/ADABAS Program Maintenance 0.46
 3. Testing IBM 2944 Channel Extender Operation 1.37 Hours
 TOTAL 24.23 Hours
 GRAND TOTAL 27.51 Hours

*NOTE 1: CPU availability will be approximately equal to VM's % Uptime.

*NOTE 2: SU = APH/PHP

*NOTE 3: APH = PHP - MHU

*NOTE 4: PHP = OHS - MHP

*NOTE 5: OHS = PHP + MHP

*NOTE 6: MUSIC's PLANNED MAINTENANCE HOURS includes 20.76 hours of system backup time in August, and 13.77 hours of system backup time on the AS/5000 in September.

*Lost productivity is calculated on the greatest amount of elapsed time that any one of the production systems was unavailable for scheduled operation.

AS/8040 Performance Statistics for September

System Type	Operating Hours Scheduled (OHS)	Maintenance Hours Planned (MHP)	Production Hours Planned (PHP)	Maintenance Hours Unplanned (MHU)	Actual Production Hours (APH)	System Uptime (SU)
VM/SP	336	0.00	336.00	3.41	332.59	99.0%
MUSIC	336	31.28	304.72	8.55	296.17	97.2%
OS/MVT	336	0.00	336.00	12.79	323.21	96.2%
COMPLETE	118	0.00	118.00	6.11	111.89	94.8%
ADABAS	118	0.00	118.00	5.94	112.06	95.0%

Lost Productivity Hours
can be contributed to the following
key causes*:

Terminal Control Systems (MEMOREX)

1. 1270 TCU Malfunctions 1.68 Hours

Miscellaneous

1. Undetermined Causes for System Restarts 5.30 Hours
 2. Implement as/8040 Operations in GAB 24.00 Hours
 3. Upgrade MVT to 6 Megabytes of Main Storage 0.51 Hours
 TOTAL 29.81 Hours
 GRAND TOTAL 31.49 Hours

*NOTE 1: CPU availability will be approximately equal to VM's % Uptime.

*NOTE 2: SU = APH/PHP

*NOTE 3: APH = PHP - MHU

*NOTE 4: PHP = OHS - MHP

*NOTE 5: OHS = PHP + MHP

*NOTE 6: MUSIC's PLANNED MAINTENANCE HOURS includes 07.28 hours of system backup time in September.

*Lost productivity is calculated on the greatest amount of elapsed time that any one of the production systems was unavailable for scheduled operation.

SPSS-X Version 2.0A, Up and Running

- 25 -

SAS data sets and then analyzed by SAS/OR procedures. As with anything else in SAS, the data sets containing the models can be saved and easily changed and reanalyzed, and output datasets containing the results of many of the analyses can be obtained. The following procedures are available:

```

ASSIGN  --> assignment problems
CPM     --> critical path analysis
LP      --> linear programming methods
NETFLOW --> network analysis
TIMEPLOT --> plotted results from PROC CPM
TRANS   --> transportation problems

```

The SAS/OR User's Guide is available at the University Store.

```

* * * * *
*           *
*       M U S I C       *
*           *
* * * * *

```

TO CALL MUSIC, DIAL: 565-3499;3989;3999;4025;4030.

MUSIC Backup Hours

Following are the scheduled hours for the MUSIC backup. A message will be sent to all users signed-on to MUSIC approximately 10 minutes before the backups are begun, and will be in the form: ** MUSIC SHUT DOWN AT xxxxx AM - SCHEDULED BACKUP ** To find out the backup hours while signed-on to MUSIC, enter HELP HOURS

MUSIC Backup Hours

Tuesday	3 AM (for about 3 hours)	Weekly Backup
Wednesday-Saturday	4 AM (for about 2 hours)	Daily Backup
Saturday	Midnight (for about 2 hours)	Daily Backup

Logging on to MUSIC Through the Local Area Network (LAN)

The following guide is a reproduction of a soon to be released reference card on MUSIC and the LAN.

Most terminals at NTSU are connected to the main computer (NAS/8040) through the LAN. To gain access to MUSIC, follow the steps below. First though, several conventions must be understood. When you see <CR> below, this means to press and release the RETURN or ENTER key on your

terminal. Also, the pound symbol "#" is the "prompt" from the local area network. In the example below, and when signing on, you type what appears AFTER the '#' symbol.

COMMAND	COMMENT
#ECHO ON<CR>	<--you type this
#CALL 8040<CR>	<--you type this
CALL COMPLETED TO 8040,0 VM/370 ONLINE	<--computer responds with this you are now linked to the main computer.
<CR>	<--enter a carriage return
!	<--computer responds with " ! "
.	<--computer responds with " . "
DIAL MUSIC<CR>	<---you type this
DIALED TO MUSIC nnn *NTSU MUSIC -- SIGN ON	<--computer responds with this (nnn is some 3-digit number)
/ID LA20;VT100<CR>	<--you enter your id and terminal identification. In this EXAMPLE, the id-code is LA20, the terminal type is VT100. Entry of terminal type is optional if you have con- figured you MUSIC PROFILE. This is described below.
*PASSWORD? #####	<--Computer asks for your password, then 'blanks' the password field
LOTUS<CR>	<--enter your password, in this EXAMPLE, it is LOTUS.
*CODE LAST USED 9SEP83	<--You have sucessfully logged on.

TO LOG ON	
*GO	<--when the terminal says this
OFF<CR>	<--you type this
*GOODBYE (also usage stats) VM/370 ONLINE	<--terminal responds with this
<CR>	<--enter a carriage return
.	<--computer responds with a "."
LOGOFF<CR>	<--you type the command LOGOFF
SESSION nnn CLOSED	<--LocalNet closes your LAN Session

Proper Set-Up Parameters for Your MUSIC Profile

In order for MUSIC to recognize your backspace, and for the 'screen' mode of the editor to function properly, you must inform MUSIC which type of terminal you are signed on to. One way to do this is to specify a terminal type each time you sign on. A preferable way, and the one which is the most efficient, is to customize your MUSIC PROFILE. Once you have specified a terminal type in PROFILE, it will not be necessary to do so each time you sign on. If you define a terminal type of VT100, and wish to use, say, the DIABLO letter-quality printer, you log on specifying the terminal type (i.e., /ID LA20;DIABLO), this will override the profile. Terminal-type definition is important for such things as proper recognition of control characters (e.g., backspace), and for proper pagination of text. The following command will change your PROFILE.

```
PROFILE TERM=VT100
```

MUSIC will respond with the message 'CHANGED', after you depress the <RETURN> key. Note that typing only the word PROFILE will allow you to change other parameters which you may wish to change. The HELP subcommand issued after entering PROFILE elucidates these. Consult the MUSIC manual for further information. Note that changes made to your profile do not take place until the NEXT time you sign on. The only exception to this is the password, which is changed immediately.

Note that most terminals on campus will be defined as VT100. This includes the MIME 740 and the TELEVIDEO 970. The older MIME 2A should be defined as IQ120. The Diablo should be defined as DIABLO, the older decwriters as LA36, and the newer decwriters as LA120. If you have a question about the correct definition of your terminal, check with the computing center, 565-2324.

MUSIC Notes

1. The timeout facility has been set to 10 minutes on all MUSIC ports. This means that if no action is taking place on a terminal (typing, depressing enter, running a job, etc.) for 10 minutes, the terminal will be dropped from MUSIC. This was instituted in an effort to keep users from tying up ports that they are not really using.
2. The MIME terminal type specification has been redefined to be used for VT52 terminal emulation mode selection. It was used to select IQ120 emulation mode in the past. If you need to emulate an IQ120 terminal, there is now a terminal type called IQ120 which can be used for that purpose. Terminals such as SOROC and the MIME-2A in IQ120 emulation mode would need to use this particular terminal type. Consult MUSIC NEWS for more information on this topic.
3. There is now an online Special User Request Facility (SURF) that has replaced the Special Handling Card. This can be accessed through MUSIC and can be accessed by typing SURF and following the instructions. If you become confused, you can type HELP and SURF will give you more information. You can also type HELP SURF when you are in *GO mode for more information on this facility.
4. There is currently a problem with using the <BREAK> key when communicating over 300 BAUD dial-up lines connected to the Local Area Network. If you enter the /PAUSE command after logging on to MUSIC, you will be able to enter the /Cancel command, should you need to, rather than using the <BREAK> key.
5. Don't forget to read MUSIC NEWS and use the HELP facilities available on MUSIC. There's more documentation out there than you may be aware of. Enter HELP HELP to find out more about the HELP facilities.

```
* * * * *
*
*   V A X   1 1 / 7 8 0s
*
* * * * *
```

TO CALL THE VAXs, DIAL: 565-4030 and enter either CALL A780 or CALL B780, depending on which system you want (this is through the Local Area Network).

Using the VAX/VMS 11/780 Systems
by Cynthia Welsh

ACCESSING THE VAX/VMS 11/780

These commands are typed after gaining access to the Local Area Network (LAN) which is indicated by the # the text printed after the # is entered by the user.


```
# ECHO OFF
# CALL A780>if you want to access VAX A
# CALL B780>if you want to access VAX B
```

Hit the <RETURN> key a few times.

If all of the available ports are busy, then this message will appear:
UNABLE TO OPEN SESSION - REMOTE PORTS BUSY

If this happens, wait a few minutes and try again.

If you receive the message: UNABLE TO OPEN SESSION - NO RESPONSE FROM UNIT try calling one of the other ports for that machine. The ports on VAX A range from A780 to A78B (24 ports). The ports on VAX B range from B780 to B787 (16 ports). The aforementioned message usually means that one of the boxes is being repaired but the other ports are available. If all of the ports give this message, contact the VAX operators at 565-4160.

When you have established connection with one of the VAXs, you will get a response something like: CALL COMPLETED TO A780,0 After this, you should hit the <RETURN> key a few times and the VAX login procedure will prompt for your Username and your Password. After entering these, you will be successfully logged onto the system.

ENTERING COMMANDS

The VMS system command language is called DCL (Digital Command Language). All commands to the system are words, generally verbs, that describe the functions they perform. When you type commands, qualifiers, or parameters you do not always need to type the full word. In fact, you never have to type more than the first four characters, and in many cases you can type only one or two characters. You must type the number of characters necessary to make the command unique. Full commands are given here and in uppercase so that you can become familiar with the commands and what they do. You can type them in upper or lower case when the dollar sign prompt appears. For example: \$ SHOW TIME This displays the current date and time.

Some other commands that will show you your environment are:

\$ WHO	This shows who is logged onto the system
\$ DIRECTORY	This lists the names of files in your directory.
\$ SHOW TERMINAL	This displays the characteristics of your terminal.

Note: If you are using a VT100 compatible terminal and the SHOW TERMINAL displays your terminal as UNKNOWN you need to enter SET TERM/VT100 so that you may use the keypad editor and PHONE. If you are logged onto a hardcopy terminal, enter SET TERM/LA120 if it is displayed as UNKNOWN.

THE HELP COMMAND

The HELP command is designed to provide you with the format of a command. Type HELP at the prompt and the system will display a list of commands and prompt you for a topic. To exit from HELP, hit the Z key while holding down the CTRL key, or hit <RETURN> until the \$ appears.

LOGGING OUT

To end your terminal session, type LOGOUT or LO. Be sure that something like: SESSION 1 CLOSED TO A780,0 is printed on your terminal, or you will not really be logged out.

COMMANDS TO MANIPULATE FILES

The TYPE command will type a file at your terminal. To get a hardcopy printout of a file, log onto a hardcopy terminal and use the TYPE command. To interrupt the output, use either the NO SCROLL key or hit the S key while depressing the CTRL key (CTRL/S). To resume output, again hit the NO SCROLL key or hit the Q key while depressing the CTRL key (CTRL/Q). CTRL/C or CTRL/Y will abort the command processing so that you may enter another command. The file type defaults to LIS, for all other file types, the entire name must be used. For example: \$ TYPE PROG1.FOR

File names can have from one to nine characters chosen from the letters A - Z and the numbers 0 - 9. File types can be from 0 - 3 characters, and must be preceded by a period. The system recognizes several default file types used for special purposes.

- BAS : Input source file for the VAX-11 BASIC compiler.
- FOR : Input source file for the VAX-11 FORTRAN compiler.
- MAR : Input source file for the VAX-11 MACRO assembler.
- PAS : Input source file for the VAX-11 PASCAL compiler.
- DAT : Data file.
- EDT : Star-up command file for EDT editor.
- EXE : Executable program image file.
- JOU : Journal file used by the EDT editor.
- LIS : Output listing file.
- MAI : Mail message file.
- OBJ : Object module file output from a compiler.

In addition to a file name and type, every file has a version number that the system assigns to a file when the file is created or revised. When you initially create a file, the system assigns it a version number of 1. When you create additional versions of the file, as when editing, the version number is automatically increased by one. Routinely, relying on previous version numbers is not recommended.

The RENAME command changes the identification of one or more files. This example changes the name of the most recent version of the file PAYROLL.DAT to TEST.OLD. \$ RENAME PAYROLL.DAT TEST.OLD

A wild card character is a symbol that you can use with many DCL commands to apply the command to several files at once, rather than specifying each file individually. The two wild card characters are the asterisk (*) and the percent sign (%). The percent sign allows you to specify all files containing any single character in the position that the percent sign occupies in the file specification. For example: \$ TYPE CHAP%.TXT Types all files with type TXT and a file name beginning with CHAP but ending in different characters, maybe CHAP1.TXT, CHAPA.TXT. The percent sign specifies only one character. To specify any number of ending characters use the *. \$ TYPE CHAP*.TXT types every file that begins with CHAP and is a TXT file.

The DELETE command deletes specific files. You must specify a file name, file type, and a version number. Any of these file components can be specified as a wild card character. Example: \$ DELETE AVERAGE.OBJ;1

The PURGE command deletes all but the most recent versions of particular files; therefore no version number is required. The /KEEP qualifier allows you to specify that you want to keep more than one version of a file. For example: \$PURGE AVERAGE.FOR keeps the most recent version. \$PURGE/KEEP=2 AVERAGE.FOR keeps the 2 most recent versions.

You can create subdirectories in any directory in which you can create files. Example: \$ CREATE/DIRECTORY MALCOLM.TESTFILES

To access files in this subdirectory use the SET DEFAULT command. Example: \$SET DEFAULT MALCOLM.TESTFILES

The HOME command will return you to your main directory.

The COPY command makes copies of files. You specify first the name of the input file you want to copy, then the name of the output file. The following COPY command copies the contents of the file PAYROLL.TST to a file named PAYROLL.OLD. \$ COPY PAYROLL.TST PAYROLL.OLD

PROGRAM DEVELOPEMNT

1. Creating the source program file. You should use the default file types for source program files. For instance, if your program is written in VAX-11 FORTRAN, its file type default is FOR.
2. Compiling or assembling the source program file to produce an object module file. There is a DCL command to invoke each language processor:

- BASIC : VAX-11 BASIC Compiler (There is also an interpreter)
- FORTRAN : VAX-11 FORTRAN Compiler
- MACRO : VAX-11 MACRO Assembler
- PASCAL : VAX-11 PASCAL Compiler

Each of these commands invokes a compiler (or assembler) to translate the source program named in the file that follows the command. Although each command differs slightly in its parameters and qualifiers, the command format is essentially the same, e.x. : \$ FORTRAN MYFILE

3. Linking the object module file to produce an image. The linker searches system libraries to resolve references to routines or symbols that are not defined within the object modules it is linking. You can request the linker to include more than one object module as input, or specify your own libraries of object modules for it to search. The format of the LINK command is:
\$ LINK MYFILE

4. Executing the program. The RUN command executes an image, that is, it places the image created by the linker into memory so that it can run, e.x.: \$ RUN MYFILE

Here is a quick rundown of several commands for easy reference. Use the HELP command to learn about additional qualifiers and more detailed information.

NAME OF COMMAND	FORMAT
COPY	Copy OLD.DAT NEW.DAT
CREATE/DIRECTORY	CREATE/DIRECTORY (TOP.SUB)
DELETE	DELETE FILES.FOR;*
DIRECTORY	DIRECTORY
HELP	HELP
HOME	HOME
PURGE	PURGE OLD.*
RENAME	RENAME OLDFONE.FOR NEWONE.FOR
SET DEFAULT	SET DEFAULT (TOP.SUB)
SET TERMINAL	SET TERMINAL/VT100
SHOW	SHOW TERMINAL
TYPE	TYPE MYPROG.FOR
WHO	WHO

```

* * * * *
*
*   H P - 2 0 0 0
*
* * * * *

```

TO CALL THE HP, DIAL: 565-3300;3900;3899;3966

HP 2000 Backup Schedule

Routine system backups are scheduled to be performed at the following times;

8:00 a.m. Monday through Friday for approximately 20 minutes.
4:00 p.m. Friday for approximately 1.5 hours.

HP NOTES
by
Jeff Brooks

Status of HP Network Ports

There are currently eight (8) HP ports on the local area network. Each of these ports is set to run at 300 baud because of the fact that the HP has a communication problem in that it does not support the LAN's communications protocol (XON/XOFF). The result of this is that if the HP is running faster than your terminal, you will lose some data, because the HP does not understand when the network tells it to "slow down". Therefore, as long as there are 300 baud dial-ups out there, we can't run all of the ports at 1200 or 2400 baud. We are, however, working on making some higher speed ports available. So, until further notice, bear with the slower speed.

HP Dial-up Numbers to Access LAN

If it hasn't happened to you already, don't be surprised if the phone numbers 565-3300, 3900, 3899, and 3966 are connecting you with the local area network instead of the HP. In the near future, all dial-up lines will go into the network instead of directly into a particular system. To learn how to deal with the Network, pick up a copy of the blue "Network Reference Card" at the Computing Center or any of the terminal rooms.

NTSU COMPUTING CENTER GENERAL USAGE EQUIPMENT LIST
(BY LOCATION)

MAIN COMPUTER ROOM, 5TH FLOOR GAB:

- 1 National Advanced Systems, Model AS/8040 Computer System with 8 megabytes of main memory.
- 1 National Advanced Systems, Model AS/6650 Computer System with 8 megabytes of main memory (to be delivered in November, 1983).
 - 1 Floating Point Systems AP-190L Array Processor
 - 4 NAS 7360-A4 Disk Storage Units (5.072 gigabytes)
 - 3 NAS 7360-B4 Disk Storage Units (3.804 gigabytes)
 - 8 NAS 7330 Disk Storage Units (1.600 gigabytes)
 - 8 NAS 7350 Disk Storage Units (2.536 gigabytes)
 - 2 NAS 7860-2 Disk Control Units
 - 2 NAS 7335 Disk Control Units
 - 6 NAS 7420 Tape Drives and Control
(320-1250 KBS, <5 1600-6250 BPI, 1 800-1600 BPI>)
 - 1 IBM 3203 Printer (1200 lpm)
 - 1 IBM 2944 Channel Extender
- 3 IBM 3272-2 Terminal Control Units (96 synchronous lines)
- 2 Memorex 1270 Terminal Control Units (16 synchronous and 96 asynchronous lines)
- 7 RENEX Protocol Converters (1 synchronous and 16 asynchronous ports each)
- 14 LN 20/200 Eight Port LocalNet 20 Packet Communication Unit
- 70 LN 20/100 Two Port PCUs

VAX COMPUTER ROOM, 5TH FLOOR GAB:

- 2 VAX 11/780 Systems with 2 megabytes of main memory each and 40 serial lines.
- 2 RP07 Disk Storage and Control Units (165 megabytes each)
- 2 TU78 Tape Subsystems <1600-6250 BPI>
- 2 RM80-AA Disk Drives (124 megabytes each)
- 2 LA120 Console Terminals

VAX RESEARCH ROOM, 5TH FLOOR GAB:

- 1 VAX 11/780 Systems with 4 megabytes of main memory, 8 serial lines and floating point accelerator.
- 1 RM 80 Disk Storage and Control Unit (124 megabytes)
- 1 TU77 Tape Subsystem <800-1600 BPI>
- 1 LA120 Console Terminals
- 1 LXY11-A Printer/Plotter (300 lpm)

COMPUTING CENTER RJE (ISB):

- 1 Unitech UT-2 Remote Job Entry Processor <ISB 134A>
 - 1 Documation M400L Card Reader (600 cpm)
 - 1 Unitech CT-1210 Line Printer (1000 lpm)
 - 1 Unitech KB-1 CRT System Console
- 1 HP 3000 Laser Printer, Model 2680 A (3000 lpm)
- 1 HP 3000 3629A Line Printer (1000 lpm)
- 1 IBM 1403-N1 printer (1100 lpm)
- 1 IBM 2821 Control Unit for 1403
- 1 DIABLO 1620 Timesharing Terminal (300 Baud)
- 1 IBM 3505 Card Reader (1200 cpm)
- 1 IBM 3575 Card Punch (300 cpm)

- 1 Hewlett Packard 2000 Access, Model 40,
Timesharing Computer System
 - 1 HP 2108A M/20 System Processor (64K)
 - 1 HP 2112A M/30 Communications Processor (64K)
 - 1 DEC LA36 Console Terminal (300 Baud)
 - 2 HP 7905A Disk Storage Units (29.5 million bytes)
 - 1 HP 12972A Tape Drive (1600 BPI, 72 KBS)
 - 1 HP 2748B Paper Tape Reader (8 level, 500 cps)
 - 2 HP 12920B Asynchronous Multiplexors (32 RS-232 Terminal
Interface Parts)
 - 1 GTE T113 BDS Data Station (12 dial-up phone lines,
110-300 Baud)

COMPUTING CENTER STUDENT KEYPUNCH AREA (Hallway-15B):

- 1 IBM 029-A22 Card Punches
- 1 IBM 059-2 Card Verifier

COMPUTING CENTER DATA ENTRY DEPARTMENT:

- 1 IBM 1230 Optical Mark Reader/Scorer
- 1 IBM 534 Card Punch Attachment for 1230

COMPUTING CENTER RECEPTION AREA (15B 119):

- 3 TI SILENT 700 Terminals (on check-out basis for faculty only)

SCIENCE AND TECHNOLOGY LIBRARY (15B 110):

- 24 Timesharing Terminals
- 2 LSI ADM3A Timesharing Terminals
- 1 Alanthus 8400 Cassette I/O Unit

MUSIC BUILDING:

- 1 DECII (LA36) Timesharing Terminal <MU 1007>
- 9 LSI ADM3A Timesharing Terminals <MU 1007 MUSIC LAB -
by appointment>
- 3 MIME CRT Timesharing Terminals <MU 2011>
- 1 DECII (LA36) Timesharing Terminal <MU 2011>

BUSINESS ADMINISTRATION BUILDING:

- 1 Unitech UT-2 Remote Job Entry Processor <BA 152>
 - 1 Documation M400L Card Reader (600 cpm)
 - 2 Unitech 6444 Line Printers (600 lpm)
 - 1 Unitech KB-1 CRT System Console

64 CRT Timesharing Terminals <BA 153>

GENERAL ACADEMIC BUILDING:

64 CRT Timesharing Terminals <5th floor GAB>

PHYSICS BUILDING:

- 1 IBM 029-A22 Card Punch
- 1 DEC LA36 Timesharing Terminal (300 Baud) <PM 310>
- 1 Calcomp 663 Plotter <B13>
- 1 LSI ADM3A Timesharing Terminal <B13>

WOOTEN HALL:

- 1 CRT (ACTV) Timesharing Terminal <WH 131>
- 1 DECII (LA36) Timesharing Terminal <WH 131>
- 2 DECII (LA36) Timesharing Terminals <WH 173>
- 2 CRT (MIME) Timesharing Terminals <WH 173>

SOFTWARE - WHAT WE HAVE AND WHAT WE SUPPORT

The following table is a "Software Support Key" designed to inform users of the level of support the Computing Center offers for maintenance, documentation, and consultation with regard to the software available on the AS/5000 the VAX 11/780s and the HP-2000. The tables that follow this key table refer to the software available on each machine.

Software Support Key**

TYPE	FULL(F)	PARTIAL(P)	Minimal(M)	None(N)
Maintenance (MT)	a. New versions with major improvements installed as soon as possible b. Bugs fixed by CCTR staff or reported to vendor as soon as possible. c. Vendor committed to fixing bugs.	a. New versions with major improvements installed as staff is available. b. Known errors may exist. c. Vendor may not be committed to fixing bugs.	a. New versions if available installed if no major modifications are required. b. Known errors may remain. c. No guarantee of support from vendor	No Maintenance
Documentation (D)	Full documentation from vendor or local source.	Documentation from vendor or local source may be inaccurate or incomplete.	Local documentation only on access. Other documentation may be available.	No new documentation.
Consultation (C)	Consultants familiar with use and problems of software.	Consultants have information on access, but more than that depends upon available staff.	Consultants have information on access only	No consulting help

**Letters in parenthesis denote abbreviations for each category.

NAS/8040 SOFTWARE

Operating System	Processor/ Library	Support (MT) (D) (C)			Source	Comment
OS/MVT (Release 21.8F Operating System)	HASP	F	F	P	IBM/NAS	Version 3.1 (spooling processor)
	MODEL 204	F	F	N		
	FORTTRAN IV	P	F	F	IBM	Version G
	FORTTRAN IV	P	F	F	IBM	Version H
	FORTTRAN IV	F	F	F	IBM	Version G1
	WATFIV	P	P	F	University of Waterloo	In-core FORTTRAN Lang. Translator
	COBOL	N	F	F	IBM	ANS Version 2
	COBOL	N	F	F	IBM	ANS Version 4
	WATBOL	F	F	F	University of Waterloo	In-core ANS COBOL Language Translator
	PL/I	N	F	F	IBM	Version F
	PL/I	F	F	F	IBM	Optimizing Compiler
	PL/C	P	F	F	Cornell University	In-core PL/I Lang. Trans.
	FORMAC	N	F	M	IBM Employee Contributed	PL/I F Superset
	ASSEMBLER	N	F	F	IBM	Version F
	ALGOL	P	F	P	IBM	Version F
	RPG	N	F	P	IBM	360 Version
	GPSS	P	F	M	IBM	360 Version
	SIMSCRIPT	F	F	M	Consolidated Analysis	Version II.5
	SNOBOL	P	F	P	Bell Telephone	Version 4

Operating System	Processor/ Library	Support (MT) (D) (C)			Source	Comment
OS/MVT	SPITBOL	P	F	P	Illinois Inst. of Technology	In-core SNOBOL4 Lang. Translator
	NTSU STATPAK	F	F	F	NTSU	
	SPSS	F	F	F	SPSS Inc.	Release 9.1
	SPSSX	F	F	F	SPSS Inc.	Version 2.0
	SAS	F	F	F	SAS Institute Inc.	Release 82.3
	SAS/ETS	F	F	F	SAS Institute Inc.	SAS Econometric & Time Series Library
	SAS/OR	F	F	P	SAS Institute Inc.	SAS Operations Research Library
	OSIRIS	N	F	P	University of Michigan	Version III
	BMD	N	P	P	UCLA	
	BMDP	F	F	F	UCLA	1982 Version
	Misc. Prog. Library	F	F	F	NTSU	
	Misc. Sub-Routines	F	F	F	NTSU	
	OS Utilities	N	F	F	IBM	
	CASORT	F	F	F	Computer Assoc.	
	User Library	N	N	N	NTSU users	Programs which could benefit others.
	Scientific Library	N	F	P	IBM	Use is not recommended.
	FORMAT	N	F	M	IBM/Stanford	Release 5
	ADABAS	F	F	N	Software AG	
	NATURAL	F	F	N	Software AG	

Operating System	Processor/ Library	Support (MT) (D) (C)			Source	Comment
OS/MVT	COM-PLETE	F	F	N	Software AG	
	Strong-Campbell Interest Inventory	M	P	M	Brigham Young Univ.	
	LINPACK	M	P	M	Argonne National Laboratory	
	Multi-Dimensional Scaling Package	M	M	P	Bell Telephone Laboratories	
	PRIME	M	F	P	University of Texas	
	IMSL	F	F	F	IMSL	Statistical and mathematical FORTRAN subroutines
	SHAZAM	M	F	P		
	WATERLOO SCRIPT	F	F	F	University of Waterloo	Text processing program
	WATFIV-S					
MUSIC (Mc Gill)	FORTTRAN IV	F	F	F	IBM	Version G1
University System for	COBOL	N	F	F	IBM	ANS Version 4
Inter-active Computing-Version V)	WATBOL	F	F	F	University of Waterloo	In-core ANS COBOL Language Translator
	PASCAL	P	P	P	McGill/Stanford	
	VS ASSEMBLER	F	F	F	IBM	OS/VS
	VS BASIC	F	F	F	IBM	
	APL	P	P	P	McGill/IBM	APL S/360 III
	STATPAK	F	F	F	McGill	

Operating System	Processor/ Library	Support (MT) (D) (C)			Source	Comment
MUSIC	IIS	F	F	F	IBM	CAI Package
	TEACH	M	F	P	Maricopa Com Col	CAI Package
	TESTER	M	F	P	Maricopa Com Col	Test Generator
	MAIL	M	F	F	Maricopa Com Col	Electronic Mailing System
	CALCOMP Plotting Routines	N	F	P	CALCOMP	
	PLI	F	F	F	McGill/IBM	Optimizing Compiler
	MUSIC/SCRIPT	F	F	F	McGill	Version V
	WATERLOO SCRIPT	M	F	F	University of Waterloo	
	POLYSOLV	M	M	M		Solves polynomial equations
VM/370 (Virtual Machine Operating System)	VM/SP	F	F	N		Release 2.2
CMS	Query By Example	F	N	N		
	COBOL	N	F	F		ANS Version 4
	WATERLOO SCRIPT	F	F	F	University of Waterloo	Text process- ing program
	ASSEMBLER	F	F	M		
	FORTTRAN	P	F	M		
	PLI	P	F	M		
	SAS	F	F	F		
	SAS FS/P	F	F	M		
	SAS GRAPH	F	F	M		

VAX SOFTWARE: Systems A and B						
Operating System	Processor/ Library	Support (MT) (D) (C)			Source	Comment
VMS	FORTTRAN	F	F	F	Digital Equipment Corporation	
	PASCAL	F	F	F	Digital Equipment Corporation	
	MACRO	F	F	F	Digital Equipment Corporation	
	COBOL	F	F	M	Digital Equipment Corporation	
	ADA	F	F	M	Telesoft	
	MODULA2	N	N	N	Bud Hammons, Computer Science Faculty	Contact Bud Hammons.
	CommonData Dic	F	F	M	Digital Equipment Corporation	CommonDataDic access name
	Datatreive	F	F	P	Digital Equipment Corporation	
	MINITAB	N	F	P	Minitab Corp.	

VAX SOFTWARE: System B Only						
Operating System	Processor/ Library	Support (MT) (D) (C)			Source	Comment
VMS	EUNICE	F	F	P		UNIX Emulator
EUNICE	C	F	F	F		
	LISP	F	F	P		

HP 2000 SOFTWARE					
Processor/Library	Support (MT) (D) (C)			Source	Comment
SPSSHHP	N	F	P	De Paul Univ.	
BASIC	N	F	F	Hewlett Packard	
EDITOR	M	F	P	Hewlett Packard	
FCOPY	M	F	P	Hewlett Packard	File Copy Utility

HP 2000 SOFTWARE					
Processor/Library	Support (MT) (D) (C)			Source	Comment
TUTOR	M	F	M	Hewlett Packard	BASIC tutorials
FINDIT	P	F	P	Hewlett Packard	File Processing
SYSPDS	P	F	P	NTSU	Word Processing
HP Contributed Lib	M	F	N	HP Users	
A9000=Pseudo Lib.	N	F	N	NTSU Users	
CALCOMP Plotting Routines	M	F	P	CALCOMP	

IN PASSING

This is just a short note to commemorate the accidental death of a friend who was near and dear to just about every computer user on the NTSU campus. The AS/5000 fell to its death from a truck in Austin, late last week. Fortunately for NTSU, it was insured and we were the beneficiary, so all is not lost, but its little metal cabinet will certainly be missed. It was one thing to know that it was going to a cosy retirement home at the Parks and Wildlife department. One could handle that, but the thought of its body, dented and twisted, is almost too much to bear. AS, we'll miss you!

INDEX TO PAST ISSUES

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